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1,061,419

1 SHEET

COMPLETE SPECIFICATION

This drawing is a reproduction of
the Original on a reduced scale.

FIG. 1.

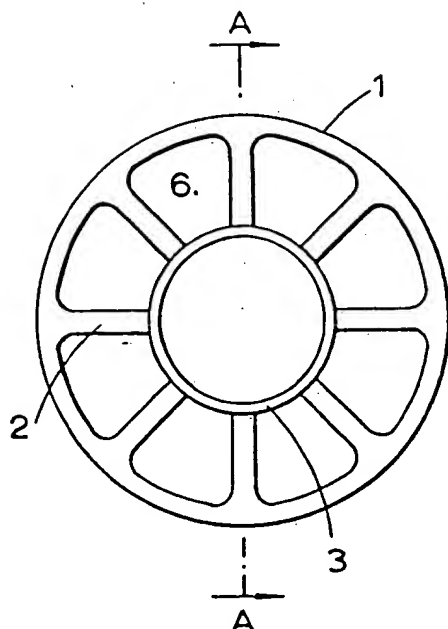


FIG. 2.

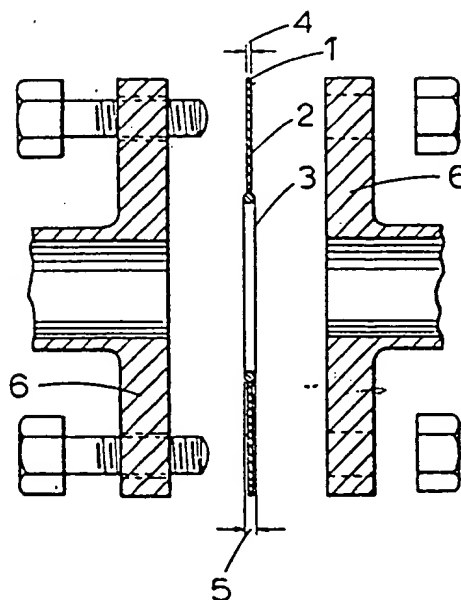
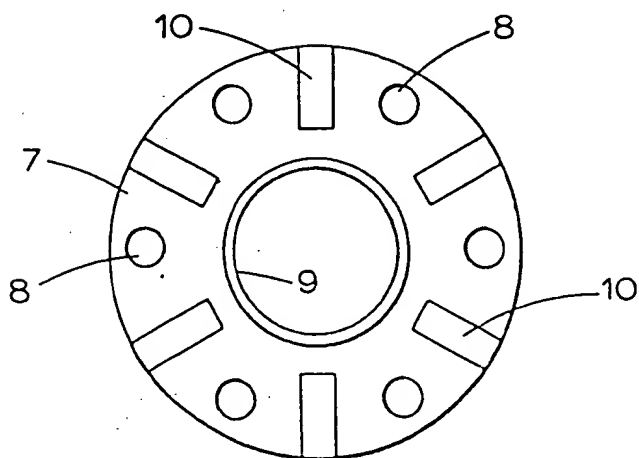


FIG. 3



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PATENT SPECIFICATION

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Inventor: TERENCE EUGENE DAYS.

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

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Improvements in or relating to Gaskets

We, MULLARD LIMITED of Abacus House, 33, Gutter Lane, London, E.C.2, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to gaskets for use between clamped flange joints in a vacuum system.

When for example such flanged joints are used in high vacuum systems it is known to use as sealing means between the flanges, a washer of a metal which does not cause contamination of the vacuum. Preferably the sealing washer should be of a metal which will yield under the clamping force of the flanges to give a satisfactory hermetic seal. Furthermore, the sealing washer should not melt when subjected to baking treatment.

One preferred metal is gold but in view of its expense, sealing members of this material must use the minimum amount of metal that will give a satisfactory seal. Unfortunately this results in sealing washers that become so flimsy that their manipulation during the clamping stage is difficult, for example, exact location of the washer with respect to the flanges is a serious problem.

The invention has for one of its objects to permit accurate sealing washer location. Another object is to provide means for ensuring the proper degree of clamping of the flanged joints and furthermore impart adequate support for a sealing washer to allow handling and easy storage prior to clamping.

According to this invention there is provided a flanged pipe joint gasket for use in a vacuum system comprising a substantially ductile sealing washer peripherally held by a separate plate-like carrier.

In one embodiment of this invention the carrier is of a substantially non-ductile

material such as stainless steel and has a thickness less than that of the ductile sealing washer, the thickness ratio being such that when the flanges are tightened against the carrier an appropriate degree of deformation of the sealing washer is ensured.

In another embodiment of this invention the carrier is made of a disposable material which may be substantially destroyed at baking temperatures. This manner of removing the carrier has the advantage of leaving the flange faces in a condition which is easily prepared for further use and obviates the removal of melted residue caused by baking. Paper or the like may be used which although destroyed by burning treatment, will nevertheless leave the sealing washer located at the required position between the flanges. In this other embodiment the appropriate degree of flange clamping can be obtained by the inclusion of shims of substantially non-ductile material which may be suitably arranged about the carrier surface. The shims may be of stainless steel strip and may be attached to the carrier by adhesion or other suitable means.

A still further embodiment of this invention comprises a ring shaped carrier having one or more inwardly directed radial arms the inner ends of which are secured to the periphery of the sealing washer, the arms being so spaced apart as to form apertures to allow the passage of through bolts for clamping the flanges and thus provide accurate location of the sealing washer relative to the flanges.

To use the gasket, the carrier with the sealing washer carried thereon is mounted between the flanges. The clamping bolts are then inserted, passing through the apertures between the arms of the carrier and the clamping nuts applied and tightened to the appropriate degree set by either the carrier

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thickness or shims thereon so that the sealing washer is deformed under clamping pressure of the flanges and thus produces an hermetic seal. If the carrier is a disposable type which is burned away or removed in any desired manner once the sealing washer is clamped in position, the removal of the carrier should not be allowed to damage the sealing washer and if the carrier is burned away the temperature involved should not be allowed to rise to a value which would damage the sealing washer. In the case of an indisposable carrier, for example a carrier made of stainless steel, which has an overall thickness such that it acts as a clamping gauge itself, the fastening of the sealing washer to the carrier can be of a temporary kind sufficient to hold the sealing washer in position but which will allow a used sealing washer to be replaced by a fresh one.

In order that this invention can be clearly understood two embodiments will now be described with reference to the accompanying drawing in which:—

Figure 1 is a plan view of a carrier with a sealing washer in position;

Figure 2 is a sectional view along the line A-A of Figure 1 with sections of clamping flanges and

Figure 3 is a plan view of a gasket using a disposable type carrier.

In Figure 1 the carrier 1 is provided with inwardly displaced radial arms 2; this is made of stainless steel and the ends of the arms 2 are secured to a gold sealing washer 3. The apertures 6 formed by the arms are so spaced as to allow the passage of through bolts for clamping joint flanges (not shown) on either side of the gasket.

The sectional view A-A of Figure 1 shown in Figure 2 illustrates the relative thickness dimensions which allow correct clamping pressures to be obtained. The carrier 1 has a thickness dimension 4 which is thinner than that of the gold ring 3, which thickness dimension is shown as 5. The ratio of dimensions 4 : 5 is such that when the flanges 6 are clamped together the resultant deformation of gold ring 3 about the flange faces is limited by the distance 4 and a proper degree of clamping is gauged by the carrier thickness 4.

In Figure 3 the carrier 7 is of paper material having apertures 8 for the passage of clamping bolts. A gold sealing washer 9 is located and secured by suitable adhesive to the carrier. In order to provide a clamping gauge, strip steel shims 10 are positioned about the carrier surface. The thickness of the shims 10 are such that they act as clamp-

ing stops between flanged joints in the manner described with reference to Figure 2.

WHAT WE CLAIM IS:—

1. A flanged pipe joint gasket for use in a vacuum system comprising a substantially ductile sealing washer peripherally held by a separate plate-like carrier.

2. A gasket as claimed in Claim 1 wherein said carrier is of a relatively non-ductile material and has a thickness dimension less than that of the sealing washer.

3. A gasket as claimed in Claim 2 wherein the ratio of carrier thickness to washer thickness is such that a predetermined deformation of the sealing washer is achieved when the flanged pipe joint is clamped to the carrier thickness.

4. A gasket as claimed in any of the preceding Claims wherein the said carrier is made of stainless steel.

5. A gasket as claimed in any of the preceding Claims wherein the sealing washer is made of gold.

6. A gasket as claimed in Claim 1 wherein said carrier is made of a material which is substantially destroyed by the application of heat.

7. A gasket as claimed in Claim 6 wherein the carrier is made of a paper-like material and incorporates on its surface non-ductile shims having a thickness less than that of the sealing washer.

8. A gasket as claimed in any of the preceding Claims wherein the carrier is ring shaped and provided with one or more inwardly directed radial arms the inner ends of which are secured to the periphery of the sealing washer.

9. In a flanged pipe joint, a gasket as claimed in Claim 8 wherein the radial arms are so spaced apart as to form apertures to allow the passage of through bolts for clamping the flanged pipe joint and guiding the sealing washer into correct alignment with the flanges.

10. A gasket as claimed in any of Claims 1, 2, 3, 4, 5, and 8 wherein said carrier and sealing washer are mutually detachable, the carrier being so constructed as to permit its repeated use with fresh sealing washers.

11. A gasket for use between flanged joints in a vacuum system as herein described with reference to the accompanying drawings.

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